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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Richard E. Durkot et al.
Serial No. : 08/905,254
Filed : August 1, 1997
Title : ZINC ELECTRODE PARTICLE FORM

Art Unit : 1745
Examiner : Monique Wills

BOX AF

Assistant Commissioner for Patents
Washington, D.C. 20231

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RESPONSE

In response to the Office Action mailed November 22, 1999, Applicants' respectfully request reconsideration of the Examiner's rejection of claims 1-28 under 35 U.S.C. § 103 over Yoshizawa in view of JP '972. The technical basis for the rejection is plainly wrong.

The invention relates to a negative electrode for an electrochemical cell. In general, the negative electrode includes active particles, such as zinc particles and zinc alloy particles, suspended in an electrolyte fluid medium. In certain aspects, the negative electrode includes at least 10 percent of the active particles having a **-200 mesh size or smaller** (claims 1, 15, 20, and 28). Note that 200 mesh size indicates particles that pass through a 200 mesh screen. See, for example, page 1, lines 28-32, and page 4, lines 14-17 of the specification. In some embodiments, negative electrode mixtures include less than 55 percent active particles (see claims 15 and 27).

Active particles of about -200 mesh size or smaller

Each of independent claims 1, 15, 20, and 28 requires active particles of about -200 mesh size or smaller that are suspended in a fluid medium.

In maintaining her rejection of the claims, the Examiner states that "Yoshizawa et al. does not disclose the shape or **mesh size** of the zinc alloy particles" (at page 3, line 7 of the

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Office Action; emphasis added). But in fact, Yoshizawa's zinc alloy powder is made by an atomization method to produce zinc alloy particles "within the range of **45-150 mesh**" (Yoshizawa col. 6, lines 27-33; emphasis added). Note that a smaller mesh size corresponds to a larger particle size. See, for example, page 9, lines 1-15 of the Specification. Thus, Yoshizawa not only discloses the mesh size but also teaches zinc alloy particles having a specific range of sizes (45-150 mesh size) which are significantly larger than the zinc alloy particle sizes (-200 mesh size or smaller) recited in claims 1, 15, 20, and 28.

Moreover, Yoshizawa does not suggest that the particles should have any size other than range of 45-150 mesh. In fact, Yoshizawa states that "the inventors have studied the composition ... to provide the optimum effect and, as a result, they have found the optimum compositions and combinations" (Yoshizawa col. 4, lines 37-43). Thus, Yoshizawa **teaches away** from altering the optimized composition, such as using zinc alloy particles having mesh sizes outside the range of 45-150 mesh size.

In her response to Applicant's previous arguments, the Examiner states that the "JP '972 references was relied on to simply demonstrate the conventionality of small zinc particles..." (at page 4, line 18 of the Office Action). Applicants contend that the teaching of particle sizes in JP '972 is irrelevant. To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed combination to have been obvious in light of the teachings of the references. In this particular situation, the primary reference, Yoshizawa, **explicitly** teaches away from the claimed combination. As a result, one skilled in the art, regardless of the teaching of a secondary reference, would not have been motivated to alter the 45-150 mesh size of the optimum compositions as taught by Yoshizawa.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 as applied to claims 1, 15, 20, and 28.

Less than 55 percent, by weight, active particles

Each of independent claims 15 and 27 requires less than 55 percent, by weight, active particles suspended in a fluid medium.

Applicants do not understand the Examiner's comments regarding the claimed weight percentages and respectfully request that she clarify her position. Specifically, the Examiner states "[r]egarding the weight percentage of fine zinc particles employed," but does not finish her statement. See, for example, the Office Action at page 4, line 5. Moreover, as stated in Applicants' previous response, neither reference, whether taken alone or in combination, discloses or suggest less than 55 percent, by weight, active particles suspended in a fluid medium.

Rather, Yoshizawa describes the gel-like anode as including zinc alloy particles and an electrolyte in a weight ratio of 2:1 (zinc particles to electrolyte) (Yoshizawa col. 7, lines 1-4). As discussed above, Yoshizawa **optimized** the compositions and combinations. See, for example, Yoshizawa col. 4, lines 37-43. The specific weight ratio of 2:1 taught by Yoshizawa, which is larger than the claimed ratio, represents his **optimized** weight ratio. Therefore, Yoshizawa does not teach a fluid medium containing less than 55 percent, by weight, of the active particles. Yoshizawa also does not suggest different weight percentages of the particles. To the contrary, Yoshizawa **teaches away** from altering the optimized composition. As a result, one skilled in the art would not have been motivated to alter Yoshizawa's optimized composition, such as changing the weight ratio, to arrive at the electrode mixtures recited in claims 15 and 27.

For at least reasons discussed above with respect to claims 1, 15, 20, and 28, Applicants submit that there is no suggestion to combine Yoshizawa with JP 972. Moreover, even if Yoshizawa were combined with JP 972 (which Applicants submit is improper), JP 972 cannot overcome the deficiencies of Yoshizawa. In fact, JP 972's negative electrode includes 60 parts by weight (coarse zinc powder and fine zinc powder) (JP 972 page 4, lines 4-17). Thus, JP 972 teaches a weight percentage that is larger than the weight percentages recited in claims 15 and 27. JP 972 also does not suggest that the weight percentages should be altered --let alone lowered to be less than 55 weight percent.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 as applied to claims 15 and 28.